CLAIMS

I claim:

1. An amplified spontaneous source (ASE) comprising:

an optical pump coupled to a pump splitter for projecting a first and a second pump lights to a first end and a second end respectively of an erbium doped fiber (EDF) for generating a first amplified spontaneous emission (ASE) and a second ASE respectively;

a reflecting means for reflecting said first ASE via a first wavelength selection means back to said EDF for transmitting and effecting a spectrum transform of said first ASE to generate a spectrum-transformed ASE in said EDF;

a second wavelength selection means coupled to said pump splitter for receiving said pump light into said EDF for generating said second ASE to combine with said spectrum-transformed ASE for generating an output optical signal having a broader spectrum than said first ASE and second ASE.

2. The ASE of claim 1 wherein:

said spectrum-transformed ASE generated in said EDF comprising substantially a L-band signal and said second ASE generated in said EDF comprising substantially a C-band signal for generating an output optical signal having a C-band and L-band combined signal.

3. The ASE of claim 1 wherein:

said reflecting means comprising a reflective coating onto a end-surface of an optical fiber spliced with said first wavelength selective means.

4. The ASE of claim 1 wherein:

said first wavelength selection means and said second wavelength selection means are respectively a first and a second wavelength division-multiplexing (WDM) devices.

6. The ASE of claim 1 wherein:

said pump splitter is an adjustable pump splitter for adjusting a power ratio of projecting said first and said second pump lights.

7. The ASE of claim 1 wherein:

said pump splitter is an fixed-ratio pump splitter for pumping a fixed power ratio of said first and said second pump lights.

8. The ASE of claim 4 wherein:

said reflecting means comprising a reflective coating onto an fiber end-surface of said first WDM.

9. An amplified spontaneous source (ASE) comprising:

an optical pump coupled to a pump splitter for projecting a first and a second pump lights into a gain medium; and

a reflecting means for reflecting said first pump light into said optical gain medium for transmitting and effecting a spectrum transform of said first pump light therein to generate a spectrum transformed ASE for generating an output optical signal having a spectrum including a spectrum-transformed wavelength range.

10. The ASE of claim 9 further comprising:

a first wavelength division-multiplexing (WDM) means for multiplexing an ASE reflected from said reflecting means into said optical gain medium and a second WDM means connected to said gain medium opposite said first WDM means for multiplexing a second ASE generated from said second pump light generating a combined output optical signal having a broader spectrum than said first ASE generated from said first pump light in said gain medium and said second ASE.

11. The ASE of claim 9 further wherein:

said gain medium is an erbium doped fiber (EDF).

12. The ASE of claim 11 wherein:

said erbium doped fiber (EDF) having a pre-designated length for effecting said spectrum transform of said first ASE reflected into said EDF.

13. The ASE of claim 9 wherein:

said reflective means comprising a reflective coating coated over an end face of said fiber.

14. The ASE of claim 9 wherein:

said first ASE generated from said first pump light in said gain medium having a peak wavelength near a C-band into said gain medium for effecting said spectrum transform for generating a substantially flat L-band ASE.

15. The ASE of claim 9 wherein:

said second ASE generated in said gain medium is a C-band optical signal for combining with said substantially flat L-band signal to project an output optical signal having a broadband range over eighty nanometers (nm).

16. The ASE of claim 9 wherein:

said pump splitter is an adjustable pump splitter for adjusting a power ratio of projecting said first and said second pump lights.

17. An amplified spontaneous source (ASE) comprising:

an erbium doped fiber (EDF) for transmitting an amplified spontaneous emission (ASE) signal therein; and

a reflective means for reflecting a reflected ASE having a peak wavelength near a C-band into said EDF for generating a substantially flat L-band optical signal.

18. The ASE of claim 17 further comprising:

a wavelength division-multiplexing (WDM) means for demultiplexing an ASE signal reflected from said reflective means into said EDF.

19. The ASE of claim 17 wherein:

said erbium doped fiber (EDF) having a pre-designated length for effecting a generation of said substantially flat L-band ASE signal.

20. The ASE of claim 17 wherein:

said reflective means comprising a reflective coating coated over an end face of an optical fiber spliced into a wavelength selective means.

21. The ASE of claim 17 further comprising:

a means for pumping a light generating a second C-band ASE signal for combining with said substantially flat L-band signal to project an output optical signal having a broadband range over eighty nanometers (nm).

22. A method for generating a broadband signal comprising:

projecting a first pump light into an gain medium for transmitting and reflecting an ASE signal generated by said pump light in said gain medium for generating a spectrum-transformed ASE signal having a broadband ready-combination spectrum over a range of wavelengths of said broadband signal.

23. The method for claim 22 further comprising:

projecting a second pump light into said gain medium for generating a second ASE signal for combining with said spectrum-transformed ASE signal into said broadband optical signal.

24. An amplified spontaneous source (ASE) comprising:

a single segment of gain medium for outputting a broadband optical signal therefrom.

25. An amplified spontaneous source (ASE) comprising:

a single pump source connecting to a single pump splitter to project two branched pump lights into a single segment of gain medium for outputting a broadband optical signal therefrom.

26. An amplified spontaneous source (ASE) comprising:

a single segment of gain medium for outputting a broadband optical signal therefrom having a broadband range about 80 nanometers and a flat spectrum.